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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ALAUBAIDI, HAYTHIM J

ART UNIT PAPER NUMBER

2171

DATE MAILED: 05/14/2004

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/997,602

Applicant(s)

LANZATELLA ET AL.

Examiner

Haythim J. Alaubaidi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is a **Final** Office Action in response the amendment filed on March 3, 2004.
2. Claims 1-25 are presented for examination, of which Claims 1, 9, 15 and 25 are independent.
3. Claims 1-25, are rejected under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-25, are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander H. Frey (U.S. Patent No. 6,029,168 and Frey hereinafter) in view of Sarit Mukherjee (U.S. Patent No. 6,466,978 and Mukherjee hereinafter).

Regarding Claims 1, 9, 5, 15 and 20-23 Frey discloses:
receiving a reference to the data object in a first storage environment, wherein the data object resides in a second storage environment (Figure No. 6, Element No. 60 and 56, i.e. ID¹; see also Col 2, Lines 55-61), i.e.

¹ Please note that the ID's can also read on the "reference to the data object".

It is another object of this invention to provide system-wide unique pointers for consistent, reliable access to distributed file data blocks. The present invention utilizes a specialized data element which enables indication of the location of another data element in a very diverse and distributed file data environment residing across several computing systems and storage devices.

(Col 2, Line 66 through Col 3, Line 3), i.e.

The invention utilizes, inter alia, techniques of distributed mapping to establish a set of values having a defined correspondence (reference) with the quantities or values of another set in a distributed computing environment.

generating a first data structure from the reference representing one or more physical locations of the data object within the second storage environment (Col 9, Lines 15-22), i.e.

a data structure stored in said memory, said data structure including, a first table² for storing information indicating a physical storage location for one or more logical file blocks associated with a first stored file.

(see also Col 5, Lines 4-10), i.e.

Generally, starter information is data constructed when a file is created describing how that file is to be spread over a node. It is often efficient to include the mapping of file blocks to be stored on this node to their disk address in data storage system 22 with this starter information. For each file created, its starter information is stored in a table at a unique starter information index 49 (refer to FIG. 5)

² The Examiner is referring to the Specification of the current Application specifically, the detail description of Fig 3, Page 14, Lines 16-17; see also Frey, Col 9, Lines 33-34, i.e. hash table.

retaining the first data structure in the first storage environment (any of the 3 data nodes in Figure No. 4) to interface with one or more of the physical locations of the data object from the first storage environment (Figure No 4; see also Col 5, Lines 43-61; see also Col 8, Lines 4-17; and also Col 6, Lines 32-42), i.e.

In particular, starter information 48 and non-starter information 50 is stored on one or more tracks on the disks 46. It will be understood by those skilled in the art that information corresponding to the indices 49, 52 are stored and maintained in files containing Table 49 and 50 in each of the Data Nodes 1, 2, and 3 in a manner similar to single processor files systems. The information at indices 49, 52 contain the particular track and physical position within the track at which the previously stored logical file data blocks 70-90 are located as the disk addresses 68.

Frey reference discloses all of the claimed subject matter set forth above, except it does not explicitly indicate the step of updating the first data structure when changes occur to the data object in the second storage environment. However the prior art of Anderson et al. that was submitted by Frey, teaches that changes in the file resource information must be incorporated into each map at each location in a manner that makes all the changes appear to be simultaneous (Col 2, Lines 33-40). Frey mentioned one problem though, in order to maintain file system consistency. Writing and updating file resource information for each map at each location any time a change is made requires and incurs substantial file system overhead (Col 2, Lines 33-40). The Examiner could use the submitted prior art mentioned by Frey as a base for the 103 rejection, but instead, a second reference (Mukherjee et al) will be used to better direct the Applicant's attention to the obviousness of combining Frey with Mukherjee.

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Mukherjee discloses updating the first data structure when changes occur to the data object in the second storage environment (Col 10, Lines 31-38 and Lines 57-59; see also Col 5, Lines 35-41).

Given the intended broad application of Frey's system, it would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Frey with the teachings Mukherjee to update the table, map or the structure of the references or locators of the data object or the file in order to maintain system consistency and accuracy especially when subsequent requests are received (Frey, Col 2, Lines 33-39).

Regarding Claim 2, Frey discloses wherein in retaining the first data structure one or more additional references access the data object using the first data structure (Col 5, Lines 19-22; see also Col 2, Lines 55-57).

Regarding Claims 3, 18 and 24, Frey discloses wherein receiving the reference an operating system of the first storage environment does not support the second storage environment (Col 2, Lines 57-61; see also Col 2, Line 58 through Col 3, Line 3; see also Col 3, Lines 43-53).

Regarding Claims 4 and 13, Frey discloses wherein during generation one or more extents of the data object within the second storage environment are provided (Col 8, Lines 24-31), i.e.

If desired, parity blocks may be computed based on subsets of the file data blocks. It is to be emphasized that the parity block and its generation is optional and is based on a file parameter and is not limited by the position where any particular file data blocks are to be stored. Additional file parameters may include extended attribute file parameters

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such as, for example, security access levels or encryption information.

Regarding Claim 5, Mukherjee discloses wherein the generation further includes detecting a mirroring of the data object on at least two storage devices within the second storage environment (Col 9, Lines 19-24).

Regarding Claims 6 and 17, Mukherjee discloses wherein during generation metadata associated with the second storage environment and the data object are provided (Col 5, Lines 35-41; Col 7, Lines 6-7).

Regarding Claim 7, Frey discloses wherein in retaining the first data structure the first data structure is validated with one or more subsequent references made to access the data object (Col 8, Lines 4-17), i.e.

In the case where a file access manager 44, on a non-starter node, receives a request to retrieve blocks of a file block (access the data object) which does not exist, the file access manager 44 sends a query to the file access manager of the starter node for the file which the request is made. The query requests that the file access manager of the starter node resolve the conflict as to whether (validate) the file has just been created and the user is too early or the file has just been deleted and the user is too late. The file access manager of the starter node (first data structure) can respond to the query by (1) confirming that the file request is valid and so the requesting file access manager should allocate or write space for the file block, or (2) stating that the file block request is invalid as the file never existed or was deleted and so the file access manager should deny the request with an error showing that no such file exists.

Regarding Claim 8, Frey discloses wherein the method is used to interface a first database using the first storage environment with a second database using the second storage environment (the combination of Figure's 1 and 2, Element No. 10

[environment] and Element No. 46 [first or second databases] interfaced through the network 12).

Regarding Claim 10, Frey discloses wherein while assembling the map attribute data are acquired and associated with the first storage environment (Col 10, Lines 1-13), i.e.

A memory for storing data for use by a file access manager program being executed on a node in a distributed computer system to access a specified logical file block of a specified stored file.

Regarding Claim 11, Frey discloses wherein assembling further includes acquiring attribute data associated with the data storage object (Col 10, Lines 1-13), i.e.

A memory for storing data for use by a file access manager program being executed on a node in a distributed computer system to access a specified logical file block of a specified stored file.

Regarding Claim 12, wherein in identifying one or more of the storage locations, the data storage object is identified as at least one of a file system or a file (Col 10, Lines 1-13), i.e.

A memory for storing data for use by a file access manager program being executed on a node in a distributed computer system to access a specified logical file block of a specified stored file (data storage object is identified as a file system or a file).

Regarding Claim 14, Frey discloses wherein the method is used to create an image or copy of the first storage environment in the second storage environment

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(Figure No 3B, Element No. 22, i.e. the objects {A, B and E} in server 36 and the copy or image of the same in server 38).

Regarding Claim 16, Mukherjee discloses wherein the map is represented as a tree data structure on the computer readable media (Col 15, Lines 5-13).

Regarding Claim 19, Frey discloses wherein the data object is referenced and modified by the accessing set of executable instructions from the second file system (Col 2, Lines 57-61).

Regarding Claim 25, the limitation of this claim has been noted in the rejected claim 1, above. In addition, Mukherjee discloses different data or file formats (Col 1, Lines 27-29, i.e.

multimedia data over traditional textual and numeric data due to inherent differences in the characteristics of the data types;

see also Col 7, Lines 63-67, i.e.

The initial bandwidth allocations are based on criteria such as prior experience, the expected workload, and the type of data the manager controls (file format).

Response to Arguments

6. Applicant's arguments filed in the amendment of March 3, 2004 have been fully considered but they are not persuasive.

Applicant argument in regard to the new add limitation of Claim No. 1 above "in the first storage environment" was addressed in rejecting Claim 1, above.

Applicant argues that Mukherjee does not teach the limitation of "updating the first data structure when changes occur to the data object in the second storage environment". The Examiner however disagrees. Mukherjee teaches "updating the first data structure when changes occur to the data object in the second storage environment" (see Mukherjee, Col 2, Lines 33-40).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Points of Contact

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haythim J. Alaubaidi whose telephone number is (703) 305-1950. The examiner can normally be reached on Monday - Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic, can be reached on (703) 308-1436.

Any response to this office action should be mailed to:

The Commissioner of Patents and Trademarks, Washington, D.C. 20231 or telefax at our fax number (703) 872-9306.

Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, 6th Floor Receptionist, Arlington, Virginia. 22202.

Haythim J. Alaubaidi

Patent Examiner
Technology Center 2100
May 12, 2004


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